E-mailing on your HF -SSB radio.
Correct installation antenna to radio to RF grounding
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Let's discuss the issues and problems in receiving many data and voice communications with poor connections which includes receiving emails and data weather information.

Starting with the antenna.
The Rope Antenna, is designed for frequencies within the marine band and if requested to be also modified for the Amateur Radio bands.

The antenna connections when attached t the top of the mast should have about 10-18 inches from the metal mast at the top.
With the Rope Antenna, there are insulators within the eye loops at each end.

Once the antenna is pulled up with a stringer " black Dacron" line is preferred as the black line is also UV protected.

Now the base of the antenna can be attached either at the stern rail on mono hulls or plus or minus 10 inches starting at the base on the shrouds in multihulls.

The antenna can be pulled to around 60 pounds, making the line taught. We recommend that the Rope Antenna not be permanently attached to the top of the mast. As the mast does sway a little ion Mono-hulls and a large amount on catamarans it causes constant pulling and releasing to the antenna.

From the antenna base, Rope Antenna has a removal connection. This allows you to disconnect the antenna when you feel there is an electrical storm approaching.

From the antenna tuner down below, you have a RF feed-line. This RF feed line is also important as to the residence to the antenna itself. But most important is the type of feed line.
For many year, there was a prophecy of using GTO-15, as the marketers thought that it protects you from 15000 volts. That is so far fetched, as , first that GTO-15 was designed for neon display signs in dinners, as to the customer would not get shocked leaning against the windows with the high voltage transformer.

Also using this type of cable has a high RF resistance as when you cut the cable you will notice that the inner core conductor is no more thickness that a straight pin. Very poor RF resistance.

Almost all broadcast stations use Braid, and Rope Antenna, makes a RF feed line using special coated braid to minimize the resistance to the antenna and to allow all the power from the tuner to the antenna.

Now from the tuner , there are 2 directions as to proper connections.
On top of the antenna tuners there is a Periclean connection with connects to the RF feed line.
This RF feed line is also critical to the antenna impeadeance. The feed line is covers with a flex covering.

From the tuner the wing nut that is the grounding source,there will be a few connections.

You have a grounding braid that will connect to the grounding shoe,(highly recommended). 1/4/ to ¾ inches, depending on the distance to the ground shoe.

RF Grounding Shoe line which connects to the grounding shoe specially mounted on the outside underwater of the vessel. Only communication lies are to be connected to this ground shoe. (can also be called “grounding plate”).

In the connection from the antenna tuner to the grounding show, it is best to insert a DC Block.

This DC block will protect any DC stray currents to the antenna tuner to prevent any damages to your tuner and stop eating the electrical traces in the tuner.

The DC Block from Antenna Tuner is a micro strip circuit board and resident from 2 to 18 MHz, to pass those frequencies to RF Ground.

The next and also the most important part of an antenna is the counterpoise.

The counterpoise is the opposing side of the antenna that connects to the grounding wing nut on the antenna tuner.
This counterpoise also is the matching lines and frequency resident to the antenna.

This subject is the most controversial subject so ms-understood.
It is important as it is the counter of the long wire that is transmitting your RF signal and also will balance the antenna tuner to allow maxim transfer of RF energy from the tuner to the antenna.

There are some manufactures that sell what they call a counterpoise with is around 10 feet and having coil wire enclosed in a hose.

This is not counterpoise and never was. 10 feet of coil wire twisted together at any distance is not true counterpoise. You must have wire at a given cut distance resanate at the frequency band that your operating at, so that the antenna tuner while searching reaches that respective frequency residence.

This counterpoise using a laddar line must be cut to each frequency, at the resident point to maximum efficiency.

Now that we have beaten that subject lets move onto the connections from the radio to the tuner.

The radio has a case ground screw on the back of most radios.
You then also run a ¼ inch braid fro that grounding screw to the ground show, but again using a DC Blocker for protection of DC ground potentials.

Now, for testing the radio transmitter.

Your radio transmitter should be connected directly to the battery source, either at the battery itself or to the A/B battery bank switch. NOT at the power panel. Reason being is that the house batteries are the most quiet source on your vessel.

When running from the power panel, all the noise sources that connect to the power panel are picking up noise from all the toy devices in your vessel., florescent lamps, halogen lamps, refrigerator, Inverters, chargers, lap tops.

Run the power to your radio directly to the battery and fuse with DC fuses, not the 110 ac volt glass fuses. I recommend for a marine radio to use 30-35 DC amp that are blade fuses as used in vehicles. Fuse both sides. These fuses are designed for 12 to 24 DC source voltages.

When using a TNC, the TNC power should be coming from the radio source, and not plugged sepertly in back of your modems. Reason is that ground source's has a difference in ground noise level and also distorts the TNC modem as what we call floor noise.

In testing your radio, connect a DC volt meter, digital is nice, but some time some meters are sensitive to RF and what you want to test the voltage while transmitting a low cost meter is distort.

When connecting the DC meter to the DC power source at the input of your radio, place the radio is the FSK mode and press the Mic PTT on your microphone and if the reading goes below 12.2, then the cables to the radio are either too long, not large enough to carry the current and has a major voltage drop, or your running via the power panel.

Your voltage should be within and more more than ½ volts at the battery terminals.
This major voltage drop will also distort your TNC in sending data. As noise gets into the power line and the more noise the more data distortion and slower data transmission rate.

Checking your antenna tuner and confirming that the antenna tuner is working in conjunction to the radio.

When changing frequencies on your radio, the tuner will sound like a rattled of relays and again when you change frequencies.
But only when you change to new frequencies .

If NOT then your connections from the radio to the tuner are either connected wrong or that the coax connection that maybe your soldering technique was not the best, and you have a RF short.

Now lets explain a RF short:

To prevent any possible RF shorts, I strongly suggest spend the cost of buying a pre- prepared cut coax cable from a professional store.

Here are the reasons that I have seen and experience over many, (to many) years.
When your making a cable , and when soldering the braid shield many vessel owners will have a very fine wire hair stranded now t he center coax core. Then they measure the coax with a continuity meter and believe that the coax line is clean.

Problem is,understandable but when now applying a test your measuring RF.
but when applying power the fine hair wire, now arcs and causes a RF short, not detectable by a DC volt meter. But when using a SWR bridge will show up as a high SWR (standing wave ratio) reading. High SWR reading reduces the output power of your radio.

I always explain to my clients to purchase a SWR meter and always leave it inline to your radio to antenna tuner coax line.

This way you visually see the power output as your transmitting.

SWR also happens when many vessel owners try to design their own antenna and all the resident points for the marine or amateur bands are non resident, then you will see SWR measurement climb high, above 1.3:1 meaning that their not using all the power from the radio and have increased noise in their radio system.

Chokes

There also seems to be a misunderstanding as to chokes and different types of chokes.
Your ability to hear weak MF and HF signals is limited by noise, generated mostly by solid-state electronic switches within your vessel. conducted via the 60-Hz power inverter to your radio,.and from there to your antenna by common-mode current on the feed line.
Putting common-mode chokes on your feed line, power, and other cables will substantially reduce your received noise level. A good choke has >> 1 kΩ impedance for all MF and HF bands.
A mix of number 42 and 77 in the ferrite choke clamp on's and place 3-4 on each side on the coax line from the radio transmitter to the tuner, should do the great in reducing noise.

Any questions to assist your installation,
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